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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2154	

DATE MAILED: 06/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/921,458	HONG ET AL.	
	Examiner	Art Unit	
	Ashok B. Patel	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2006 and 18 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-88* is/are pending in the application.

4a) Of the above claim(s) *1-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *40-88* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/4/05, 9/26/05, 11/19/2004, 3/11/03, 4/15/02, 8/22/05, 11/6/01.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-88 are subject to examination. Claims 1-39 have been cancelled.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/18/2005 has been entered.

Response to Arguments

3. Applicant's arguments filed 08/18/2005 have been fully considered but they are not persuasive for the following reasons:

Applicant's argument: Jordan

"Moreover, Jordan monitors the request frequency not for specific invariants which are associated with specific information but rather for specific cache servers, each of which contains information associated with a number of different invariants."

"Jordan fails to teach or suggest the italicized features above."

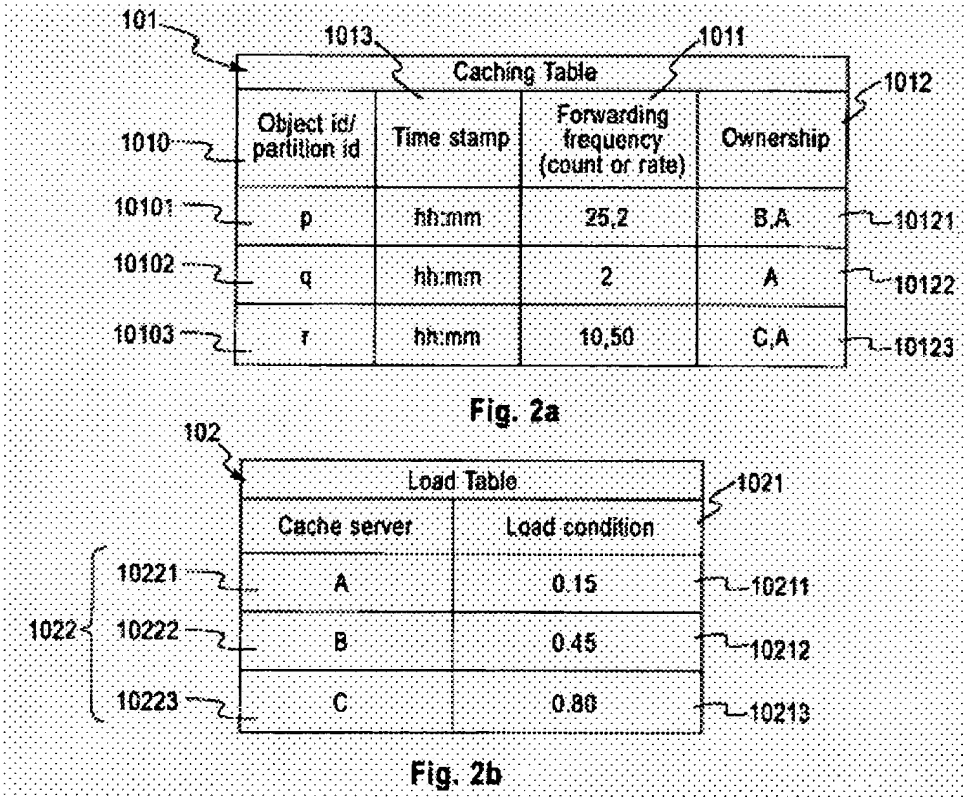
Examiner's response:

Jordan teaches in Abstract, "An overload condition is detected if for example, due to reference skew, some objects are in high demand by all the clients and the cache servers that contain those hot objects become overloaded due to forwarded requests."

Jordan teaches at col. 1, line 61 through col. 2, line 3, "However, these traditional approaches distribute only "direct requests" and do not address a load imbalance problem resulting from too many requests for hot objects being simultaneously forwarded to the same proxy server. The present invention addresses such a need."

As such, Jordan monitors the request frequency for specific invariants which are associated with specific information.

Jordan teaches at Fig. 2 as follows:



Jordan in conjunction with Fig. 2 explains at col. 6, line 6-13, "FIGS. 2a-b shows examples of data formats of two tables maintained by the load monitor. As depicted, the tables include a load table 102, and a caching table 101. One skilled in the art will appreciate that a single table, or various other data structures could alternatively or

equivalently be used. The load table 102 includes the load condition 1021 of each (A,B,C . . . 1022) cache server 150 so that overloaded and under loaded servers can be identified:" And as stated as above, Jordan in Abstract indicated, "An overload condition is detected if for example, due to reference skew, some objects are in high demand by all the clients and the cache servers that contain those hot objects become overloaded due to forwarded requests."

As such, Jordan teaches the feature "(a) the maintenance of a "hot table" based not on the number and/or frequency of requests for objects from a selected server but on the number and/or frequency of requests received by a group of servers for the objects."

Jordan teaches at col.4, line 24-37, "In a fully distributed implementation of the present invention, the cooperating cache servers can each include a distributed load monitor for monitoring and locally maintaining load conditions, and also can maintain the forwarding frequency and ownership information in a local copy of a caching table or by means of a hashing function. The cooperating cache servers can modify the ownership information by means of the local copy of the caching table or the hash function.", and at col. 6, line 42-45, "Further, the caching information for an object or a partition 1010 can include a forwarding frequency over a given time period (count/time) for the object ID or partition ID 1010 through the load monitor 120. Object partitions 1010 can alternatively be based on a hash function on object identifiers, or can be based on the directory structures that objects are organized by on the web servers. In the case of a partition, any object belonging to a partition will be forwarded by the load

monitor. The shifting of ownership can be based on the load condition of the servers, the forwarding frequency 1011 and other information such as the time stamp information."

As such, Jordan teaches the features "(b) the generation, when a hit counter for an invariant indicates at least a threshold transaction request receipt frequency, of a digest value pointing to the location in the hot invariant table where the corresponding entry is stored; and/or (c) a digest store that stores the digests corresponding to frequently requested content."

Applicant's argument: Wallace, Jr. and Balijepalli

"Although Wallace, Jr does teach parsing an encrypted payload, Wallace, Jr fails to teach or suggest parsing plain text transaction requests prior to routing of the request by the flow switch."

"Wallace fails to teach or suggest the use of a server identifying tag. Wallace does teach the use of a cookie but fails to teach the use of a tag in addition to the cookie."

"Jordan teaches only that the load monitor 120 does not consider the "hotness" of the requested information when no load imbalance condition or loading trend is found to exist."

Examiner's response:

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11, [0158] " With this decrypted private data, a state may be created between the server

and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to repeat the process of sending a cookie at Jordan's flow switch level (Tag to select appropriate information server) along the cookie of the content origin server identifying the cache server that has the user requested content and appending the cookie of flow switch (tag) such that the state created between the Jordan's cache server and the user be maintained. Thus any number of requests are substantially simultaneously served.

Please also refer to the teachings of Jordan as stated above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 40, 43-46, 48, 69 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan et al.(hereinafter Jordan) (US 6, 438, 652 B1) in view of AAPA (Applicant's Admitted Prior Art) (page2))

Referring to claim 40,

Jordan teaches:

a plurality of information servers connected to a communications network and serving a set of information to clients, each of the information servers being configured to receive a transaction request associated with an individual transaction and to provide a response to each transaction request. (Fig. 1a)

a content director (Fig. 1a, element 120) connecting the information servers (Fig. 1a, elements 150) to the communications network (Fig. 1a, elements 110, 115) and distributing transaction requests among the information servers (Abstract) comprising:

a flow switch that selects an appropriate information server to service each transaction request and thereafter forwards at least portions of the transaction request to a selected one of the information servers (col. 5, line 61-63);

a cache that stores (col. 8, line 37-40), in a hot invariant table (Fig. 2a, 2b), a plurality of objects corresponding to at least some of the transaction requests forwarded to one or more of the information servers (Fig.2a, element 1010), the hot invariant table identifying information frequently requested from the information servers (Fig.2a) and including, for each invariant identifying corresponding information (Fig.2a, element 1010),, a hit counter indicating a number of transaction requests (Figs 2b, element 1011, col. 6, line 50-64), received over a determined time interval, requesting the corresponding information (Fig. 2b, element 1013, col. 6, line 38-45);

a cache processor that accesses the plurality of objects in response to communications received from the flow switch (col. 5, line 50-65);

a digest generator that generates, when the hit counter for an invariant

indicates at least a threshold transaction request receipt frequency, a digest value pointing to the location in the hot invariant table where the corresponding entry is stored; and a digest store that stores the digests corresponding to frequently requested content. (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Jordan fails to teach an arrangement for serving information requests, comprising: all of the information servers having a common address on the communications network .

AAPA teaches an arrangement for serving information requests, comprising: all of the information servers having a common address on the communications network(page 2 of Specification).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance Jordan by AAPA's teachings such that the traffic destined for the global IP address is load balanced across the servers within that group based on the workload of the servers with source IP address and selected server address affinity. All clients accessing the servers see only the global IP address and are indifferent to the number of replicated servers within the farm and to which specific server their traffic is being forwarded.

Referring to claim 43,

Jordan teaches the arrangement ofclaim4o, wherein each invariant in the hot invariant table further has a corresponding timestamp indicating when the respective entry was last updated (Fig. 2a, element 1013), and a tag identifying a corresponding information server providing the corresponding information. (Fig. 2a, element 1012).

Referring to claim 44,

Jordan teaches the arrangement of claim 40, wherein the digest store includes a digest value for each frequently requested invariant. (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Referring to claim 45 and 46,

Jordan teaches arrangement of claim 40, wherein, when the hit counter for an invariant indicates at least a threshold transaction request receipt frequency, the information corresponding to the invariant is served by a cache information server and not an origin information server, and arrangement of claim 45, wherein, when the hit counter for an invariant falls below a threshold transaction request receipt frequency, the information corresponding to the invariant is served by an origin information server and not a cache information server. (col. 5, line 37-41, col. 6, line 20-25)

Referring to claim 48,

Jordan teaches the arrangement of claim 40, further comprising: at least one traffic manager located between the content director and one or more clients to effect load balancing across a plurality of content directors. (Fig. 1a, element 130).

Referring to claim 69,

Claim 69 is a claim to means that carries out the functions of elements of claim 40. Therefore, claim 69 is rejected for the reasons set forth for claim 40.

Referring to claim 72,

Claim 72 is a claim to means that carries out the functions of elements of claims 45 and 46. Therefore, claim 72 is rejected for the reasons set forth for claims 45 and 46

6. Claims 47 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan et al.(hereinafter Jordan) (US 6, 438, 652 B1) in view of AAPA (Applicant's Admitted Prior Art) (page2)) as applied to claim 40 above, and further in view of Balijepalli et al. (hereinafter Balijepalli) (US 2004/0230566 A1).

Referring to claim 47,

Both references Jordan and AAPA fail to specifically teach wherein the digest value is determined according to the following equation:

L = h(K), where 0<= L<= M,, for all keys K, where K is at least a portion of the invariant, h is the hash function, L is the location of K in the hot invariant table, and M is the size of the hot invariant table.

Balijepalli teaches in page 8, para.[0066], "For best performance, the table size and hash function must be tailored to the number of entries and range of keys to be used."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance Jordan's and AAPA's combined system with a hash function including Balijepalli's recommended hash function parameters such that it facilitates providing rapid access to data items which are distinguished by some key. Each data item to be stored is associated with a key. A hash function is applied to the item's key and the resulting hash value is used as an index to select one of a number of "hash buckets" in a hash table. The table contains pointers to the original items as taught by Balijepalli.

Referring to claim 73,

Claim 73 is a claim to means that carries out the functions of elements of claim 47. Therefore, claim 73 is rejected for the reasons set forth for claim 47.

7. Claims 41, 42, 49, 50-53, 55, 56, 70, 71, 74 and 76-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan et al.(hereinafter Jordan) (US 6, 438, 652 B1) in view of AAPA (Applicant's Admitted Prior Art) (page2)) as applied to claim 40 above, and further in view of Wallace, Jr. (US 2002/0112154 A1).

Referring to claim 41 and 42,

Keeping in mind the teachings of the references Jordan teaches content director (Fig. 1a, (element 120), information server (Fig. 1a, element 150) and flow switch (col. 5, line 61-63).

Jordan fails to teach all of the information servers having a common address on the communications network

AAPA teaches an arrangement for serving information requests, comprising: all of the information servers having a common address on the communications network(page 2 of Specification).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance Jordan by AAPA's teachings such that the traffic destined for the global IP address is load balanced across the servers within that group based on the workload of the servers with source IP address and selected server address affinity. All clients accessing the servers see only the global IP address and are

indifferent to the number of replicated servers within the farm and to which specific server their traffic is being forwarded.

Both Jordan and AAPA, both references fail to teach parsing of plain text transaction requests to locate selected fields and a cryptographic module that decrypts, cipher text transaction requests and provides plain text transaction requests, and arrangement of claim 41, wherein, first and second encrypted transaction requests are received from different clients having a common electronic address and served substantially simultaneously by different information servers, wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned by the flow switch to service transaction requests from the client, and wherein the flow switch uses at least one of an invariant, a cookie, and a tag in the parsed plain text equivalent of each transaction request to select an appropriate information server to service each of the first and second transaction requests.

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11, [0158] " With this decrypted private data, a state may be created between the server and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to repeat the process of sending a cookie at Jordan's flow switch level (Tag to select appropriate information server) along the cookie of the

content origin server identifying the cache server that has the user requested content and appending the cookie of flow switch (tag) such that the state created between the Jordan's cache server and the user be maintained. Thus any number of requests are substantially simultaneously served.

Referring to claim 49,

Jordan teaches the arrangement of claim 40, wherein the content director includes a current connection table listing active connections between servers and clients, the current connection table comprising, for a selected invariant, a persistency timestamp indicating when a last transaction request was received from the respective client for the selected invariant, and value. (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Jordan fails to teach all of the information servers having a common address on the communications network.

AAPA teaches an arrangement for serving information requests, comprising: all of the information servers having a common address on the communications network(page 2 of Specification).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance Jordan by AAPA's teachings such that the traffic destined for the global IP address is load balanced across the servers within that group based on the workload of the servers with source IP address and selected server address affinity. All clients accessing the servers see only the global IP address and are indifferent to the number of replicated servers within the farm and to which specific server their traffic is being forwarded.

Both references fail to teach a session identifier identifying a session with a client, and cookie name.

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11, [0158] " With this decrypted private data, a state may be created between the server and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user." (a session identifier identifying a session with a client, and cookie name.)

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to store session identification identifying a session with a client and cookie name at Jordan's flow switch level identifying the content origin server such that the system can obviously identify the user requests for particular origin server for particular content from particular cache server within a given time interval.

Referring to claims 50, 51, 52 and 53,

Keeping in mind the teachings of the references Jordan teaches content director (Fig. 1a, (element 120), information server (Fig. 1a, element 150) and flow switch (col. 5, line 61-63). Jordan also teaches "the switch operates in a digesting mode in which digests are generated, invariant hotness is monitored. "(Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Jordan fails to teach all of the information servers having a common address on the communications network

AAPA teaches an arrangement for serving information requests, comprising: all of the information servers having a common address on the communications network(page 2 of Specification).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance Jordan by AAPA's teachings such that the traffic destined for the global IP address is load balanced across the servers within that group based on the workload of the servers with source IP address and selected server address affinity. All clients accessing the servers see only the global IP address and are indifferent to the number of replicated servers within the farm and to which specific server their traffic is being forwarded.

Both Jordan and AAPA fail to teach wherein the flow switch is operable to tag a transaction response, the tag identifying an information server generating the transaction response, and the arrangement of claim 50. wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned by the flow switch to service transaction requests from the client, and wherein the cookie is different from the tag, and the arrangement of claim 51, wherein the tag is concatenated to the cookie, and the arrangement of claim 52, wherein, during a first time interval, the flow switch is in a tagging mode in which the switch generates and appends tags to transaction responses and transaction requests are routed to information servers based on requested invariant hotness and/or cookie.

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11,

[0158] " With this decrypted private data, a state may be created between the server and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to repeat the process of sending a cookie at Jordan's flow switch level (tag to select appropriate information (Jordan's cache) server) along the cookie of the content origin server identifying the cache server that has the user requested content and appending the cookie of flow switch (tag) such that the state created between the Jordan's cache server and the user be maintained. Thus any number of requests are substantially simultaneously served.

Referring to claims 55 and 56,

Keeping in mind the teachings of the references Jordan teaches content director (Fig. 1a, (element 120), information server (Fig. 1a, element 150) and flow switch (col. 5, line 61-63).

Jordan fails to teach all of the information servers having a common address on the communications network

AAPA teaches an arrangement for serving information requests, comprising: all of the information servers having a common address on the communications network(page 2 of Specification).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance Jordan by AAPA's teachings such that the

traffic destined for the global IP address is load balanced across the servers within that group based on the workload of the servers with source IP address and selected server address affinity. All clients accessing the servers see only the global IP address and are indifferent to the number of replicated servers within the farm and to which specific server their traffic is being forwarded.

Both Jordan and AAPA, both references fail to teach decrypting a cipher text transaction request to provide a plain text transaction request , parsing the plain text transaction request to locate one or more selected fields; based on the one or more selected fields, selecting an appropriate information server to service the transaction request; and thereafter forwarding at least portions of the plain text transaction request to a selected one of the information servers, wherein the cipher text transaction request is decrypted prior to the parsing and selecting steps and wherein, prior to the decrypting step, the cipher text transaction request has not been directed, and method of claim 55, further comprising: receiving first and second encrypted transaction requests from different clients having a common electronic address, the requests being served substantially simultaneously by different information servers, wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server to service transaction requests from the client, and using at least one of an invariant, a cookie, and a tag in the parsed plain text equivalent of each transaction request to select an appropriate information server to service each of the first and second transaction requests.

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11, [0158] " With this decrypted private data, a state may be created between the server and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to repeat the process of sending a cookie at Jordan's flow switch level (Tag to select appropriate information server) along the cookie of the content origin server identifying the cache server that has the user requested content and appending the cookie of flow switch (tag") such that the state created between the Jordan's cache server and the user be maintained. Thus any number of requests are substantially simultaneously served.

Referring to claims 70 and 71,

Claims 70 and 71 are claims to means that carries out the functions of elements of claims 41 and 42. Therefore, claim 70 and 71 are rejected for the reasons set forth for claims 41 and 42.

Referring to claim 74,

Claim 74 is a claim to means that carries out the functions of elements of claims 50, 51 and 52. Therefore, claim 74 is rejected for the reasons set forth for claims 50, 51 and 52.

Referring to claims 76 and 77,

Keeping in mind the teachings of the references Jordan teaches content director (Fig. 1a, (element 120), information server (Fig. 1a, element 150) and flow switch (col. 5, line 61-63).

Jordan fails to teach all of the information servers having a common address on the communications network

AAPA teaches an arrangement for serving information requests, comprising: all of the information servers having a common address on the communications network(page 2 of Specification).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance Jordan by AAPA's teachings such that the traffic destined for the global IP address is load balanced across the servers within that group based on the workload of the servers with source IP address and selected server address affinity. All clients accessing the servers see only the global IP address and are indifferent to the number of replicated servers within the farm and to which specific server their traffic is being forwarded.

Both Jordan and AAPA, both references fail to teach decrypting a cipher text transaction request to provide a plain text transaction request , parsing the plain text transaction request to locate one or more selected fields; based on the one or more selected fields, selecting an appropriate information server to service the transaction request; and thereafter forwarding at least portions of the plain text transaction request to a selected one of the information servers, wherein the cipher text transaction request is decrypted prior to the parsing and selecting steps and wherein, prior to the decrypting

step, the cipher text transaction request has not been directed, and method of claim 55, further comprising: receiving first and second encrypted transaction requests from different clients having a common electronic address, the requests being served substantially simultaneously by different information servers, wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server to service transaction requests from the client, and using at least one of an invariant, a cookie, and a tag in the parsed plain text equivalent of each transaction request to select an appropriate information server to service each of the first and second transaction requests

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11, [0158] " With this decrypted private data, a state may be created between the server and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to repeat the process of sending a cookie at Jordan's flow switch level (Tag to select appropriate information server) along the cookie of the content origin server identifying the cache server that has the user requested content and appending the cookie of flow switch (tag") such that the state created between the Jordan's cache server and the user be maintained. Thus any number of requests are substantially simultaneously served.

Referring to claim 78,

Jordan teaches the method of claim 76, further comprising: generating, when the hit counter for an invariant indicates at least a threshold transaction request receipt frequency, a digest value pointing to the location in the hot invariant table where the corresponding entry is stored; and accessing the hot invariant table to select an information server to service a transaction request for frequently requested information. (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Referring to claim 79,

Jordan teaches the method of claim 78, wherein a digest value is generated for each frequently requested invariant. (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

8. Claims 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan et al.(hereinafter Jordan) (US 6, 438, 652 B1) in view of AAPA (Applicant's Admitted Prior Art) (page2)) further in view of Wallace, Jr. (US 2002/0112154 A1). as applied to claim 76 above, and further in view of Balijepalli et al. (hereinafter Balijepalli) (US 2004/0230566 A1).

Referring to claim 81,

The references Jordan ,AAPA and Wallace fail to specifically teach wherein the digest value is determined according to the following equation: L = h(K), where 0<= L<= M,, for all keys K, where K is at least a portion of the invariant, h is the hash function, L is the location of K in the hot invariant table, and M is the size of the hot invariant table.

Balijepalli teaches in page 8, para.[0066], "For best performance, the table size and hash function must be tailored to the number of entries and range of keys to be used."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance Jordan's ,AAPA's and Wallace's combined system with a hash function including Balijepalli's recommended hash function parameters such that it facilitates providing rapid access to data items which are distinguished by some key. Each data item to be stored is associated with a key. A hash function is applied to the item's key and the resulting hash value is used as an index to select one of a number of "hash buckets" in a hash table. The table contains pointers to the original items as taught by Balijepalli.

9. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan et al.(hereinafter Jordan) (US 6, 438, 652 B1) in view of Balijepalli et al. (hereinafter Balijepalli) (US 2004/0230566 A1).

Referring to claim 61,

Jordan fails to specifically teach wherein the digest value is determined according to the following equation: L = h(K), where 0<= L<= M, for all keys K, where K is at least a portion of the invariant, h is the hash function, L is the location of K in the hot invariant table, and M is the size of the hot invariant table.

Balijepalli teaches in page 8, para.[0066], "For best performance, the table size and hash function must be tailored to the number of entries and range of keys to be used."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to enhance Jordan's system with a hash function including Balijepalli's recommended hash function parameters such that it facilitates providing rapid access to data items which are distinguished by some key. Each data item to be stored is associated with a key. A hash function is applied to the item's key and the resulting hash value is used as an index to select one of a number of "hash buckets" in a hash table. The table contains pointers to the original items as taught by Balijepalli.

10. Claims 63-67 and 83-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan et al.(hereinafter Jordan) (US 6, 438, 652 B1) in view of in view of Wallace, Jr. (US 2002/0112154 A1).

Referring to claim 63,

Jordan teaches maintaining a current connection table listing active connections between servers and clients, the current connection table comprising, for a selected invariant, a persistency timestamp indicating when a last transaction request was received from the respective client for the selected invariant, and value. (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Jordan fails to teach a session identifier identifying a session with a client, and cookie name.

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11,

[0158] " With this decrypted private data, a state may be created between the server and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user." (a session identifier identifying a session with a client, and cookie name.)

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to store session identification identifying a session with a client and cookie name at Jordan's flow switch level identifying the content origin server such that the system can obviously identify the user requests for particular origin server for particular content from particular cache server within a given time interval.

Referring to claims 64, 65, 66 and 67,

Keeping in mind the teachings of the references Jordan teaches content director (Fig. 1a, (element 120), information server (Fig. 1a, element 150) and flow switch (col. 5, line 61-63). Jordan also teaches "generating a digest value for frequently requested information, the digest value indicating a location where an object associated with the frequently requested information is stored; monitoring the frequency of transaction requests for information; "(Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Jordan fails to teach the first flow switch tagging a transaction response, the tag identifying an information server generating the transaction response, and wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned to service transaction requests from the client, and wherein the cookie is different from the tag, and wherein the tag is concatenated to

the cookie, and directing transaction requests to information servers based on the frequency of request of information and/or a cookie included in at least some of the transaction requests.

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11, [0158] " With this decrypted private data, a state may be created between the server and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to repeat the process of sending a cookie at Jordan's flow switch level (tag to select appropriate information (Jordan's cache) server) along the cookie of the content origin server identifying the cache server that has the user requested content and appending the cookie of flow switch (tag) such that the state created between the Jordan's cache server and the user be maintained. Thus any number of requests are substantially simultaneously served.

Referring to claim 83,

Jordan teaches maintaining a current connection table listing active connections between servers and clients, the current connection table comprising, for a selected invariant, a persistency timestamp indicating when a last transaction request was received from the respective client for the selected invariant, and value. (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Jordan fails to teach a session identifier identifying a session with a client, and cookie name.

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11, [0158] " With this decrypted private data, a state may be created between the server and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user." (a session identifier identifying a session with a client, and cookie name.)

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to store session identification identifying a session with a client and cookie name at Jordan's flow switch level identifying the content origin server such that the system can obviously identify the user requests for particular origin server for particular content from particular cache server within a given time interval.

Referring to claims 84, 85, 86 and 87,

Keeping in mind the teachings of the references Jordan teaches content director (Fig. 1a, (element 120), information server (Fig. 1a, element 150) and flow switch (col. 5, line 61-63). Jordan also teaches "generating a digest value for frequently requested information, the digest value indicating a location where an object associated with the frequently requested information is stored; monitoring the frequency of transaction requests for information; "(Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Jordan fails to teach the first flow switch tagging a transaction response, the tag

identifying an information server generating the transaction response, and wherein at least some of the responses include a cookie, wherein the cookie is generated by the information server previously assigned to service transaction requests from the client, and wherein the cookie is different from the tag, and wherein the tag is concatenated to the cookie, and directing transaction requests to information servers based on the frequency of request of information and/or a cookie included in at least some of the transaction requests.

Wallace teaches on page 10, para.[0143[]) "Thus, a cookie may be assigned to an individual server or to an entire Internet domain." Wallace also teaches on page 11, [0158] " With this decrypted private data, a state may be created between the server and the remote computer of a user. For example, the decrypted data may be the user's last name, such as "Gossage" wherein the server may now know the identity of the user; thus creating a state between the server and the user."

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to repeat the process of sending a cookie at Jordan's flow switch level (tag to select appropriate information (Jordan's cache) server) along the cookie of the content origin server identifying the cache server that has the user requested content and appending the cookie of flow switch (tag) such that the state created between the Jordan's cache server and the user be maintained. Thus any number of requests are substantially simultaneously served.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless-

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 54, 57-60, 62, 75, 80, 82 and 88 are rejected under 35 U.S.C. 102(e) as being anticipated by Jordan et al.(hereinafter Jordan) (US 6, 438, 652 B1)

Referring to claim 54,

Jordan teaches an arrangement comprising a plurality of information servers connected to a communications network, each of the information servers being configured to receive a transaction request associated with an individual transaction and to provide a response to each transaction request, a method for serving transaction requests from clients (Fig. 1a) comprising:

maintaining a hot invariant table (Fig. 2a, 2b) identifying information frequently requested from the information servers, the hot invariant table including, for each invariant identifying corresponding information (Fig. 2a, element 1010), a hit counter indicating a number of transaction requests (Fig. 2b, element 1011, col. 6, line 50-64), received over a determined time interval, requesting the corresponding information (Fig. 2b, element 1013, col. 6, line 38-45);

generating, when the hit counter for a selected invariant indicates at least a threshold transaction request receipt frequency, a digest value pointing to the location in the hot invariant table where the entry corresponding to the selected invariant is stored; and accessing a digest store comprising the digest values to select an information server to service a transaction request for frequently requested information. (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Referring to claim 57,

Jordon teaches the method of claim 54, wherein each invariant in the hot invariant table further has a corresponding timestamp indicating when the respective entry was last updated, and a tag identifying a corresponding information server providing the corresponding information. (Fig. 2a, element 1012)

Referring to claim 58,

Jordon teaches the method of claim 54, wherein a digest value is generated for each frequently requested invariant. (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45).

Referring to claims 59 and 60,

Jordon teaches the method of claim 58, further comprising: when the hit counter for an invariant indicates at least a threshold transaction request receipt frequency, directing a transaction request for information associated with the invariant o a cache information server, and the method of claim 59, further comprising: when the hit counter for an invariant falls below a threshold transaction request receipt frequency, directing a transaction request for information associated with the invariant to an origin information server. (col. 5, line 37-41, col. 6, line 20-25).

Referring to claim 62,

Jordon teaches the method of claim 54, wherein at least one traffic manager is located between the content director and one or more clients to elect load balancing across a plurality of content directors. (Fig. 1a, element 130).

Referring to claim 68,

Claim 68 is a claim to computer readable medium comprising instructions to perform the steps of claim 54. Therefore claim 68 is rejected for the reasons set forth for claim 54.

Referring to claim 75,

Jordan teaches in an arrangement comprising a plurality of information servers connected to a communications network, each of the information servers being configured to receive a transaction request associated with an individual transaction and to provide a response to each transaction request, a method for serving transaction requests from clients (Fig. 1a)comprising:

maintaining a hot invariant table (Fig. 2a, 2b) identifying information frequently requested from the information servers, the hot invariant table including, for each invariant identifying corresponding information (Fig. 2a, element 1010), a hit counter indicating a number of transaction requests (Fig. 2b, element 1011, col. 6, line 50-64), received over a determined time interval, requesting the corresponding information (Fig. 2b, element 1013, col. 6, line 38-45);

when the hit counter for an invariant indicates at least a threshold transaction request receipt frequency, locating the information associated with the invariant at a

cache information server and thereafter directing a transaction request for information associated with the invariant to a cache information server (Fig. 2a, col. 4, line 28-37, col. 6, line 42-45); and

when the hit counter for an invariant falls below a threshold transaction request receipt frequency, directing a transaction request for information associated with the invariant to an origin information server. (col. 5, line 37-41, col. 6, line 20-25).

Referring to claim 80,

Jordan teaches the method of claim 75, wherein each invariant in the hot invariant table further has a corresponding timestamp indicating when the respective entry was last updated (Fig. 2a, element 1013), and a tag identifying a corresponding information server providing the corresponding information. (Fig. 2a, element 1012)

Referring to claim 82,

Jordan teaches the method of claim 75, wherein at least one traffic manager is located between the content director and one or more clients to effect load balancing across a plurality of content directors. (Fig. 1a, element 130).

Referring to claim 88,

Claim 88 is a claim to computer readable medium comprising instructions to perform the steps of claim 75. Therefore claim 88 is rejected for the reasons set forth for claim 75.

Conclusion

Examiner's note: Examiner has cited particular columns and line numbers in the

references as applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok B. Patel whose telephone number is (571) 272-3972. The examiner can normally be reached on 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A. Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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